

# A GENERIC REVIEW OF THE FAMILY PHALONIIDAE WITH DESCRIPTIONS OF TWO NEW GENERA AND ONE NEW SPECIES

By AUGUST BUSCK

of the Bureau of Entomology and Plant Quarantine,  
United States Department of Agriculture

Dr. John A. Comstock of Los Angeles, California, recently sent for determination a series of moths reared by Dr. W. D. Pierce from dodder, *Cuscuta californica*. It proved to be an undetermined species, a color variety of which has been received repeatedly from Nogales, Arizona, where it was intercepted as injurious to the fruit of bell-peppers, *Capsicum frutescens grossum* Bailey, imported from Sinaloa, Mexico. The species might therefore become an object for possible quarantine measures, if it had not been ascertained that it already is established in California. For this reason as well as for the record of a systematically interesting aberrant form of the family *Phaloniidae* a description of the species is desirable.

The opportunity is taken to give a synoptic key of the American genera of the family, based on the genitalia.

Thirty years ago I published a generic review of the family<sup>1</sup> based on venational characters. These characters are as useful today as then, but our conception of the family limits has been modified. As we proposed in the review, the genus *Carposina* and its allies have since been recognized as a distinct family. The *Carposinidae* are not at all closely related to the *Phaloniidae*. A study of the genitalia abundantly justifies this separation.<sup>2</sup>

## Family PHALONIIDAE

Small moths with more or less roughly scaled head. Antennae simple, shorter than fore wings and without pecten on basal joint. Ocelli present but small and easily overlooked. Tongue weak or obsolete. Labial palpi moderate, second joint roughly scaled, terminal joint porrect. Fore wing elongate with rounded apex and with a bend at the end of the cell which gives the moth a bell-shaped outline when at rest; 12 veins, all separate or with 7 and 8 stalked; vein 2 from outer fourth of cell; vein

<sup>1</sup> Jour. N. York Ent. Soc., vol. 15, pp. 19-36, 1907.

<sup>2</sup> Bull. Brooklyn Ent. Soc., vol. 26, pl. 10, fig. 3, 1931.

1a entirely absent even on margin. These last two characters separate the family from the related family *Tortricidae*. Vein 1b strongly forked at base. Hind wing trapezoidal with 8 veins; 3 and 4 separate, connate or stalked; 6 and 7 separate, connate or stalked. Posterior tibiae rough-scaled or haired above.

The male genitalia of the family are very diversified in structure. The uncus may be present or absent; the socii are always present but may be soft and pendant or hard and upright or projecting downwards. The harpes are usually broad and short, but exhibit great variation in form; the gnathos, however, is always absent and its function as check on the anal tube is taken over by the strongly developed, normally spined transtilla; the anellus is large and the aedeagus disproportionately large; the penis has strong armature of one or many short cornuti.

The female genitalia are characterized by the wide ostium, necessary for the robust male parts; by the very short and wide ductus, and by the large bursa with numerous spines or other sclerotizations.

The genitalia of *Phaloniidae* substantiate the generic divisions, based on venation. Figures of both sexes of available genotypes are presented.

#### SYNOPTIC KEY TO GENERA ON CHARACTERS OF MALE GENITALIA

1. Uncus present ..... 2  
Uncus absent ..... 4
2. Cornutus a single strong spine ..... 3  
Cornuti numerous small spines ..... *Lorita* Busck
3. Socii long, pendant ..... *Hysterosia* Stephens  
Socii short ..... *Propira* Durrant
4. Anellus with strong central hook; harpes  
divided ..... *Euxanthia* Hübner  
Anellus without such hook; harpes not divided ..... 5
5. Penis with single, very long, strong cornutus ..... 6  
Penis with many cornuti or without cornuti ..... 9
6. Transtilla without median projection ..... *Commophila* Hübner  
Transtilla with strong median projection ..... 7
7. Socii upwardly curved ..... *Aethes* Billberg  
Socii pendant ..... 8
8. Socii short, bulgy ..... *Phtheochroa* Stephens  
Socii long, slender ..... *Carolella* Busck
9. Socii pendant ..... 10  
Socii upturned ..... 11

10. Socii soft, bulgy ..... *Heinrichia* Busck  
Socii stiff, slender ..... *Clysia* Hübner
11. Harpe with sacculus projecting ..... *Phalonia* Hübner  
Harpe not so ..... 12
12. Cornuti present, numerous ..... *Lozopera* Stephens  
Cornuti absent ..... *Chlidonia* Hübner

#### SYNOPTIC KEY TO GENERA ON VENATION

1. Fore wing with 7 and 8 stalked ..... 2  
Fore wing with 7 and 8 separate ..... 3
2. Hind wing with 3 and 4 stalked ..... *Clysia* Hübner  
Hind wing with 3 and 4 separate ..... *Lozopera* Stephens
3. Fore wing with 7 to costa or apex ..... 4  
Fore wing with 7 to termen ..... 9
4. Hind wing with 3 and 4 separate ..... 5  
Hind wing with 3 and 4 connate or stalked ..... 8
5. Fore wing with internal vein from between 11 and 12 ..... 6  
Fore wing with internal vein from between 10 and 11 ..... 7
6. Hind wing with 6 and 7 approximate ..... *Phtheochroa* Stephens  
Hind wing with 6 and 7 stalked ..... *Aethes* Billberg
7. Fore wing with raised scales ..... *Lorita* Busck  
Fore wing smooth ..... *Phalonia* Hübner
8. Hind wing with 6 and 7 stalked ..... *Heinrichia* Busck  
Hind wing with 6 and 7 approximate ..... *Propira* Durrant
9. Hind wing with 6 and 7 separate ..... *Hysterosia* Stephens  
Hind wing with 6 and 7 stalked ..... 10
10. Hind wing with 3 and 4 separate ..... 11  
Hind wing with 3 and 4 connate or stalked ..... 12
11. Fore wing with raised scales ..... *Commophila* Hübner  
Fore wing smooth ..... *Chlidonia* Hübner
12. Hind wing with 3 and 4 connate ..... *Carolella* Busck  
Hind wing with 3 and 4 stalked ..... *Euzanthia* Hübner

LORITA, new genus.

Type: *L. abornana*, new species.

Plate 17, figs. 1-5.

Labial palpi short, porrect; second joint with large triangular tuft; terminal joint shorter. Fore wing with slightly raised scales; 12 veins, all separate, 7 to costa. Hind wing narrower than fore wing; 8 veins; 6 and 7 long-stalked; 3 and 4 separate; lower cell vein not hairy. Posterior tibia rough-haired above.

Male genitalia with well-developed, slightly curved uncus; socii upright, closely applied to uncus; gnathos absent; trans-tilla strong, broad, with long, central, unspined process; anellus large, supporting the very large aedeagus; penis with numerous small spine-like cornuti. Vinculum strong, V-shaped; harpes short, broad at base, gently tapering to blunt apex. Female genitalia with large ostium; ductus short, wide, supported by a circle of elongate, narrow sclerotizations; bursa with a wide, longitudinal band of minute spines.

LORITA ABORNANA, new species.

Labial palpi whitish yellow, darker yellowish fuscous on outer sides. Face and head light yellow. Thorax light yellow with anterior edge darker yellowish fuscous. Fore wing light yellow overlaid with large scintillating patches of slightly raised, silvery scales, and with darker yellowish brown and black markings as follows: A large, round, brown spot on the end of the cell, margined above and below with a few scattered black scales; just beyond the middle of costa a similarly colored costal spot; at apical fourth an irregularly wavy, oblique, transverse, brown fascia; tip of wing brown; costal edge with equally spaced, minute, black dots from base to apex; on dorsal edge before middle an ill-defined, large, triangular patch of black scales, cilia light silvery yellow. Hind wing fuscous with cilia a shade lighter. Abdomen dark brownish fuscous. Legs yellowish fuscous, marked sparsely with black on outer sides.

Alar expanse, 10-12 mm.

Type, U. S. National Museum No. 53250.

Paratypes in Los Angeles Museum.

Type locality, El Segundo, Los Angeles, California.

Food plant, *Cuscuta californica* Choisy.

Described from a series bred by Dr. W. D. Pierce.

Named in honor of the young, talented musician, Lora Aborn, who endeavors with success to put the scintillating colors and flight of Lepidoptera into her compositions.

LORITA ABORNANA CHATKA, new variety.

Exactly like *Lorita abornana* in size and markings and identical in genitalia of both sexes, but the ground color of the fore wing is distinctly light gray instead of light ochreous as in the California specimens. This, in my judgment, is merely a color variation, due to the different food plant or climatic conditions, but the difference is very noticeable, and with the very different food plant might cause confusion in future determination.

While it is well known that many species of the family *Phaloniidae* are not confined to a single food plant, but may feed on a variety of such, it is nevertheless surprising to find a species on two such unrelated plants as *Cuscuta* and *Capsicum*.

For this reason and because this form eventually will be treated in the economic literature, it seems desirable to give it a varietal name.

Alar expanse, 10-12 mm.

Type, U. S. National Museum No. 53261.

Type locality, Sinaloa, Mexico.

Food plant, *Capsicum frutescens grossum* Bailey.

Reared repeatedly by Mr. P. X. Peltier of the Bureau of Entomology and Plant Quarantine, United States Department of Agriculture, stationed at Nogales, Arizona. The caterpillars were intercepted on green bell-pepper fruits and were observed boring into the stalks and capsules, thereby causing some reduction in the commercial value of the products.

PROPIRA Durrant.

Biol. Centr.-Amer. Heterocera, vol. 4, p. 297, 1914.

Type: *Tortrix schreibersiana* Frölich.

Plate 18, figs. 1, 2.

Fore wing with all veins separate, 7 to apex. Hind wing with 3 and 4 connate, 5 parallel to 4, 6 and 7 closely approximate on basal third.

HYSTEROSIA Stephens.

List. Brit. Anim. Brit Mus., p. 85, 1852.

Type: *Tortrix inopiana* Haworth.

Plate 18, figs. 3, 4.

Bainbrige Fletcher has substituted the later name *Idiographis* Lederer (Wien. Ent. Monatsschr., vol. 3, p. 246, 1859), with the same genotype, for the earlier name *Hysterosia* on the ground that this genus was not described by Stephens. According to the International Rules, however, the designation of a described species as monotype, is sufficient to validate a generic name and I am glad to resurrect the much better known, older name.

Fore wing, 7 and 8 separate, 7 to termen; with strong costal fold. Hind wing, 3 and 4 connate, 6 and 7 closely approximate, but separate at base.

A large number of species, many yet undescribed, are found in North America.

CLYSIA Hübner.

Verz. bekannt. Schmett., p. 409, 1825.

Type: *Clysia ambiguella* Hübner.

Plate 18, fig. 5.

Fore wing with 7 and 8 stalked to costa. Hind wing with 3 and 4 stalked, 6 and 7 stalked. The genus has not yet been recognized from North America.

CHLIDONIA Hübner.

Verz. bekannt. Schmett., p. 393, 1825.

Type: *Tortrix baumanniana* Schiffermüller.

Plate 19, figs. 1, 2.

Fore wing with all veins separate, 7 to termen. Hind wings with 3 and 4 separate, 6 and 7 stalked.

LOZOPERA Stephens.

Ill. Brit. Ent. Haust., vol. 4, p. 187, 1834.

Type: *Tortrix francillana* Fabricius.

Plate 19, figs. 3, 4.

Fore wing with 7 and 8 stalked to costa; 11 approximate to 10, internal vein from between 11 and 12. Hind wing with 3 and 4 separate, 6 and 7 long stalked.

HEINRICHIA, new genus.

Type: *Commophila macrocarpana* Walsingham.

Plate 19, fig. 5.

In my review of the family (1907) I used the name *Commophila* Stephens for our American species there included in my concept. Durrant (Biol. Centr.-Amer., Heterocera, vol. 4, p. 297, 1914) pointed out that the name *Commophila* had been restricted to *aeneana* Hübner (Plate 4, figs. 1, 2) by Stephens and that Fernald had definitely cited that species as the genotype.

In an attempt to supply another suitable name Durrant erected the genus *Propira*, but made *schreibersiana* Frölich the type, which is a far cry from our American forms placed in *Commophila*, and this very characteristic group therefore still requires a name; this I supply as above in honor of my col-

league, Carl Heinrich, who has given a figure of the male genitalia of the genotype (Proc. U. S. Nat. Mus., vol. 57, pl. 2, fig. 12, 1920), here reproduced.

Fore wing with 7 and 8 separate, or sometimes connate, 7 to costa or apex. Fore wing with raised scales. Hind wing with 6 and 7 stalked; 3 and 4 connate or stalked.

COMMOPHILA Hübner.

Verz. bekannt. Schmett., p. 392, 1825.

Type: *Commophila aeneana* Hübner.

Plate 20, figs. 1, 2.

Fore wing, 7 and 8 separate, 7 to termen. Hind wing, 3 and 4 very closely approximate or connate; 6 and 7 short stalked, closely approximate on basal half.

CAROLELLA, new genus.

PHARMACIS Hübner (preoccupied).

Zuträge exot. Schmett., vol. 2, p. 10, 1823.

Type: *Pharmacis sartana* Hübner.

Plate 20, figs. 3, 4.

The generic name *Pharmacis* Hübner, utilized in my review of 1907, was preoccupied twice by Hübner himself, in the Geometridae and in the Hepialidae. The genus has incorrectly been made a synonym of *Euxanthis* Hübner by Bainbrigge Fletcher.

Fore wing with all veins separate, 7 to termen. Hind wing with 3 and 4 connate, 6 and 7 stalked.

Named after "Little Carol."

EUXANTHIS Hübner.

Verz. bekannt. Schmett., p. 391, 1825.

Type: *Tortrix hamana* Linnaeus.

Plate 20, figs. 5, 6.

Fore wing with all veins separate, 7 to termen. Hind wing with 3 and 4 stalked, 6 and 7 stalked.

AETHES Billberg.

Billberg's Enumeratia, p. 90, 1820.

Type: *Tortrix smeathmanniana* Fabricius.

Plate 21, figs. 1, 2.



Fore wing with all veins separate, 7 to costa, 11 approximate to 10, internal vein from between 11 and 12. Hind wing with 3 and 4 separate, 6 and 7 long stalked.

The genus was erroneously made a synonym of *Phalonia* by Bainbrigge Fletcher; it is more closely allied to *Lozopera*, which differs mainly in having veins 7 and 8 of fore wing stalked.

*PHTHEOCHROA* Stephens.

Ill. Brit. Ent. Haust., vol. 4, p. 184, 1854.

Type: *Tortrix rugosana* Hübner.

Plate 21, figs. 3, 4.

Fore wing with 7 and 8 separate, 7 to costa or apex; 11 approximate to 10, internal vein from between 11 and 12; wings with tufted scales. Hind wing with 3 and 4 connate or stalked; 6 and 7 closely approximate at base.

Bainbrigge Fletcher has erroneously placed *Propira* Durrant as a synonym of this genus. The type of *Propira* is *schreibersiana* Frölich, and the genus differs radically in both venation and genitalia; it is more closely related to *Hysterosia*, but without the uncus and the costal fold of that genus.

No North American species of *Phthechochroa* has yet been recognized.

*PHALONIA* Hübner.

Verz. bekannt. Schmett., p. 393, 1825.

Type: *Tortrix tessellana* Hübner.

Plate 21, figs. 5, 6.

Fore wing with all veins separate, 7 to costa. Hind wing with 3 and 4 separate, 6 and 7 stalked.

*SAPHENISTA* Walsingham.

Biol. Centr.-Amer., Heterocera, vol. 4, p. 296, 1914.

Type: *Thyralia lacteipalpis* Walsingham.

Fore wing with all veins separate, 7 to costa. Hind wing with 3 and 4 stalked, 6 and 7 stalked. The genotype is unknown to me except from a cursory examination in the British Museum, and I am not certain that the other West Indian species described under that generic name are truly congeneric; hence I am unwilling to include the genus in the key.



The drawings for the plates accompanying this paper were made from the author's slides by Mrs. Eleanor A. Carlin, of the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture.

#### EXPLANATION OF PLATES

Plate 17. Fig. 1. *Lorita abornana* Busck, male genitalia, aedeagus removed.

Fig. 2. *Lorita abornana*, aedeagus.

Fig. 3. *Lorita abornana*, female genitalia.

Fig. 4. *Lorita abornana*, head and palpus.

Fig. 5. *Lorita abornana*, venation.

Plate 18. Fig. 1. *Propira schreibersiana* (Frölich), male genitalia.

Fig. 2. *Propira schreibersiana* (Frölich), female genitalia.

Fig. 3. *Hysterosia inopiana* (Haworth), male genitalia.

Fig. 4. *Hysterosia inopiana* (Haworth), female genitalia.

Fig. 5. *Clysia ambiguella* Hübner, male genitalia.

Plate 19. Fig. 1. *Chlidonia baumanniana* (Schiffermüller), male genitalia.

Fig. 2. *Chlidonia baumanniana* (Schiffermüller), female genitalia.

Fig. 3. *Lozopera francillana* (Fabricius), male genitalia.

Fig. 4. *Lozopera francillana* (Fabricius), female genitalia.

Fig. 5. *Heinrichia macrocarpana* (Walsingham), male genitalia (after Heinrich).

Plate 20. Fig. 1. *Commophila aeneana* Hübner, male genitalia.

Fig. 2. *Commophila aeneana* Hübner, female genitalia.

Fig. 3. *Carolella sartana* (Hübner), male genitalia.

Fig. 4. *Carolella sartana* (Hübner), female genitalia.

Fig. 5. *Euranthis hamana* (Linnaeus), male genitalia.

Fig. 6. *Euranthis hamana* (Linnaeus), female genitalia.

Plate 21. Fig. 1. *Aethes smeathmanniana* (Fabricius), male genitalia.

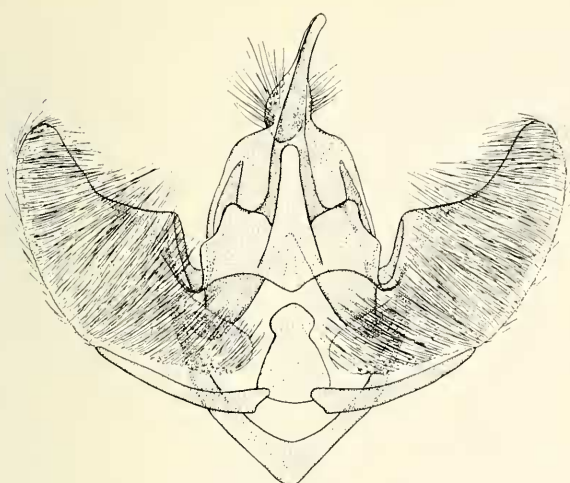
Fig. 2. *Aethes smeathmanniana* (Fabricius), female genitalia.

Fig. 3. *Phtheochroa rugosana* (Hübner), male genitalia.

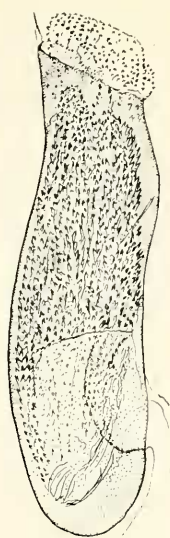
Fig. 4. *Phtheochroa rugosana* (Hübner), female genitalia.

Fig. 5. *Phalonia tessellana* (Hübner), male genitalia.

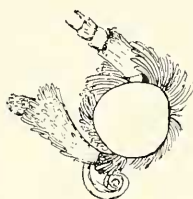
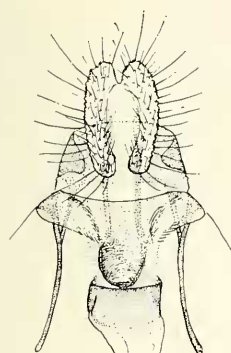
Fig. 6. *Phalonia tessellana* (Hübner), female genitalia.



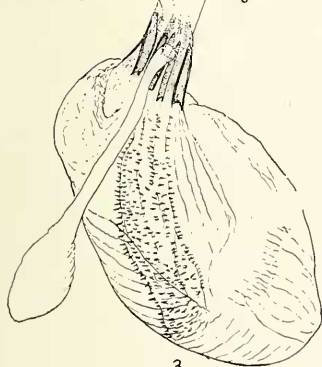
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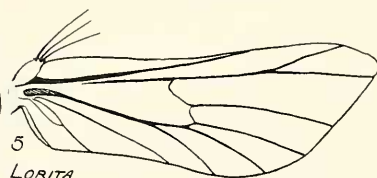
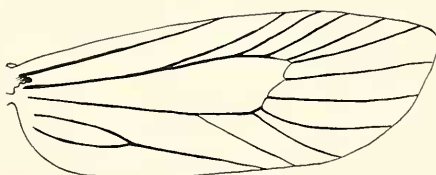
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4



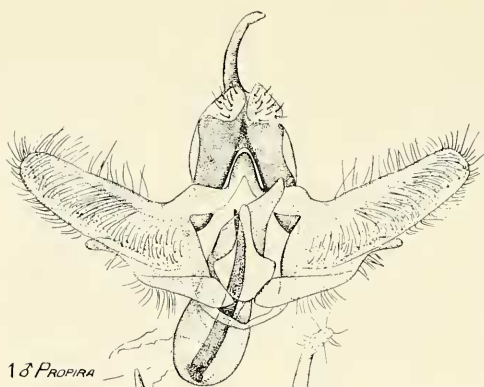
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5

LORITA

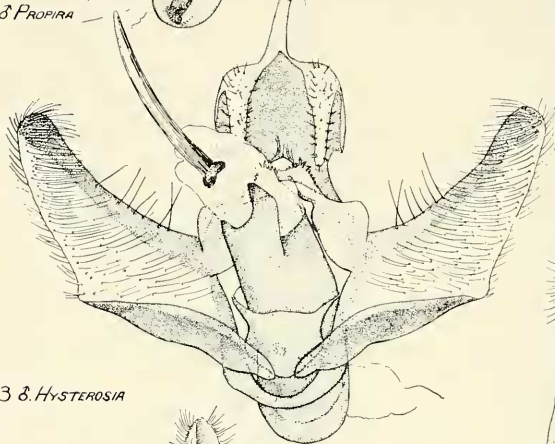
PLATE 17



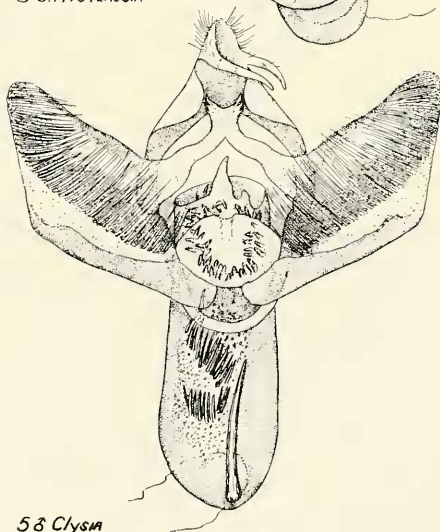
1 ♂ *PROPIRA*



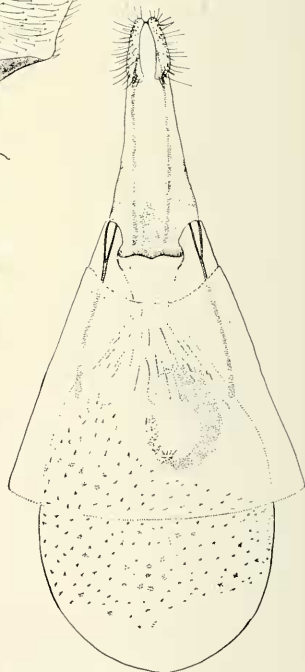
2. ♀ *PROPIRA*



3 ♂ *HYSTEROSIA*

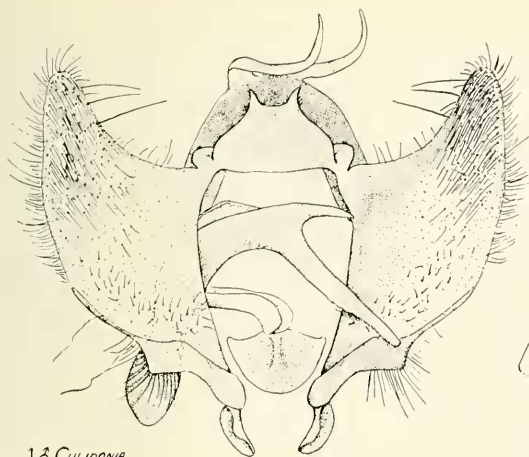


5 ♂ *CLYSIA*



4 ♀ *HYSTEROSIA*

PLATE 18



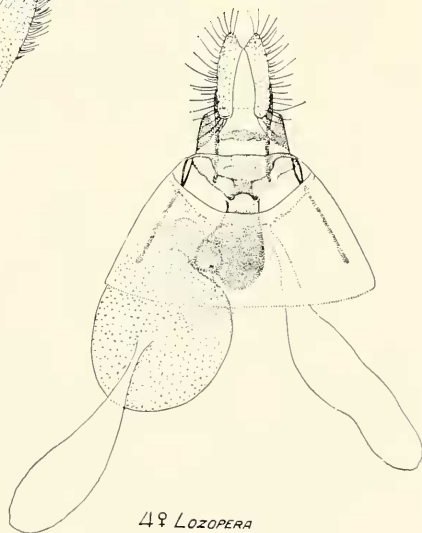
1♂ *CHLIDONIA*



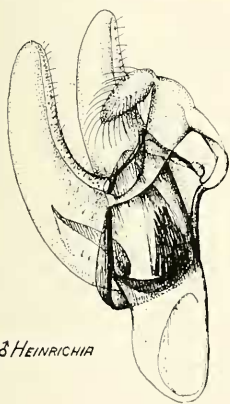
2♀ *CHLIDONIA*



3♂ *LOZOPERA*

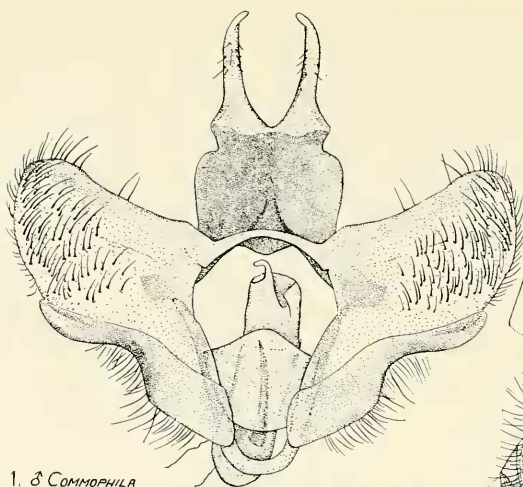


4♀ *LOZOPERA*

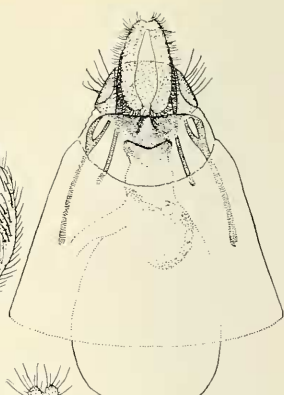


5♂ *HEINRICHIA*

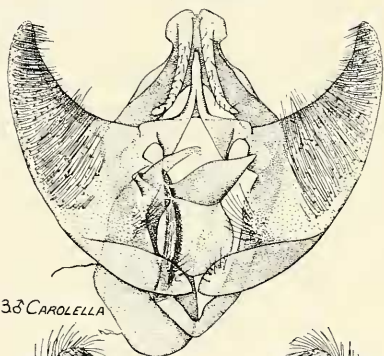
PLATE 19



1. ♂ *COMMOPHILA*



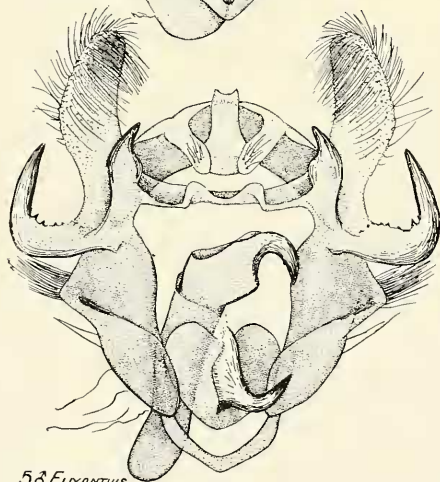
2. ♀ *COMMOPHILA*



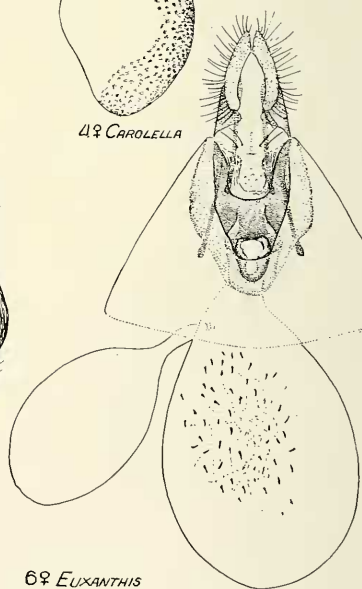
3. ♂ *CAROLELLA*



4. ♀ *CAROLELLA*

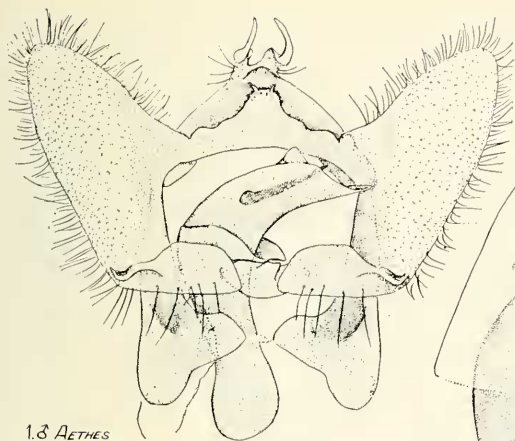


5. ♂ *EUXANTHIA*

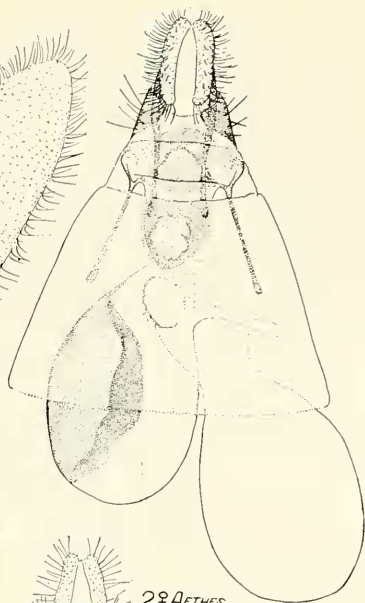


6. ♀ *EUXANTHIA*

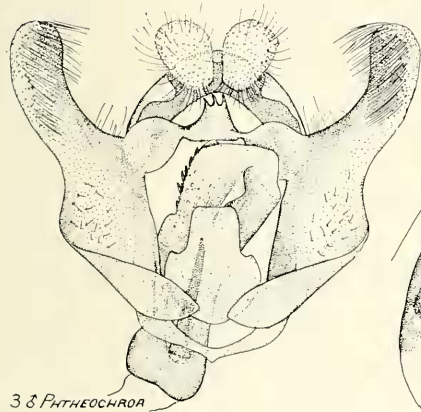
PLATE 20



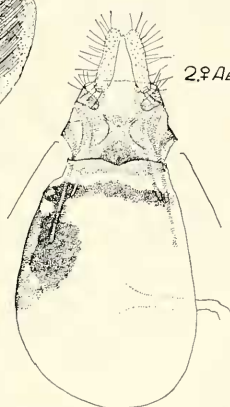
1♂ *AETHES*



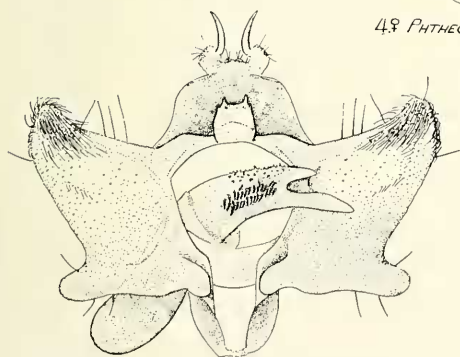
2♀ *AETHES*



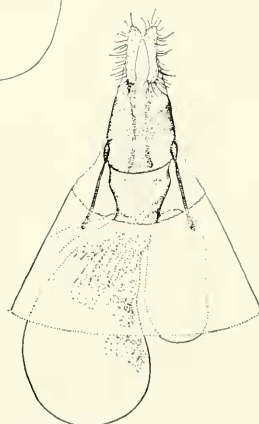
3♂ *PTHOECHROA*



4♀ *PTHOECHROA*



5♂ *PHALONIA*



6♀ *PHALONIA*

PLATE 21